SCIENCE & EDUCATION Impact
Benefits From the USDA/Land-Grant Partnership

Conserving Natural Resources

Looking after the environment and the bottom line.

Once upon a time, the question was, "How do we do this most efficiently?" Later, the question became, "How do we protect ourselves, the environment, and our natural resources?" Today, thanks to U.S. Department of Agriculture (USDA)/Land-Grant research and extension efforts, we're answering both questions at the same time.

Payoff

- **"Ever" glades.** Farming the 440,000 acres north of **Florida's** Everglades National Park generates more than $1 billion annually in economic activity, but some of the chemicals used in production challenge the delicate ecosystem of the park. New agricultural management practices developed by **Florida** scientists and taught by extension educators have reduced the amount of phosphorus entering the Everglades by 51 percent over the past three years.

- **Wiley's alive and well in Texas.** Controlling a rabies epidemic among wild coyotes without having to eliminate the animals in affected regions is the issue, and **Texas A&M** scientists have found a solution. The scientists wrap oral rabies vaccines in dog food or fish meal and drop it into the coyote habitat from airplanes. The program slashed the number of coyote rabies cases in an affected region from 70 to 2, and research suggests that nearly 90 percent of coyotes have now ingested the vaccine.

- **Dust in the wind.** Soil erosion is a serious problem in production agriculture. The deep field-tilling techniques used by farmers for years leave topsoil vulnerable to wind and water erosion, depleting this essential resource for future crops. In addition, deep tilling requires equipment, fuel, and labor, and these costs add up. However, new "no-till" or "reduced-till" planting methods—being studied and taught farmers by Land-Grant universities across the country—are reducing soil erosion significantly. An **Oregon State** no-till cropping program eradicated soil erosion in winter wheat fields almost completely and showed that farmers can preserve soil and generate income from fields previously left barren. A similar

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program in **Washington** uses perennial wheat to reduce erosion on highly vulnerable land. **Penn State** is using crown vetch and other cover crops as a mulch system to significantly cut the amount of nitrogen fertilizer needed to grow corn and soybeans. This "living carpet" almost completely eliminates surface water runoff and loss of soil, fertilizers, and pesticides to streams and lakes, with estimated savings of $400 million per year for Pennsylvania farmers. Similar results are being seen with tobacco and tomato production in **Tennessee**, where no-till methods are cutting erosion by 90 percent. **Louisiana State** helps cotton producers use a reduced-till method, benefiting the environment and cutting labor costs by 40 percent.

- **High-density green.** By the year 2000, an estimated 75 percent of the U.S. population will live in urban areas. Trees benefit these areas by cleaning the air; storing carbon, thus reducing the greenhouse effect and global warming; lowering heating and cooling costs of homes and businesses; and counteracting the effects of carbon emissions from automobiles and factories. The bigger and healthier the tree, the better the job it does of reducing pollution. **Purdue** scientists and extension educators are working to ensure the health of urban forests by training arborists in proper tree care and maintenance. A single, well-maintained 32-foot green ash saves $50 in energy costs, $6.70 in water, and $6.63 in pollution costs on an annual basis. **Connecticut** Extension specialists work with local officials to facilitate good land-use choices that will preserve and enhance the state's natural resources. Educational programs have resulted in the development of new conservation plans, development plan revisions, changes in zoning regulations, and a better understanding of property tax laws—as well as preservation of 500 acres of open green space. Twenty communities have updated their natural resource inventories and comprehensive plans for open space.

- **Heavy metal harvest.** Zinc, cadmium, lead, copper—heavy metals such as these are a national concern because they contaminate our soil and pose serious health risks to animals and humans. To get rid of them, the affected soil is simply hauled away and dumped into a landfill, at a cost of $2 million per acre. **Maryland** scientists, however, may have an amazing solution. They are studying a unique group of plants that can literally suck heavy metals out of the ground and store them in new shoots. After the shoots are harvested, the metals are smelted out and can be sold for recycling.

- **Getting a grip on purple loosestrife.** Purple loosestrife is an exotic weed that poses a serious ecological threat to North American wetlands. This insidious European plant has no natural enemies to check its growth, leaving it free to choke out all other vegetation in wetland environments. Scientists in **Illinois, Minnesota,** and **New York** import and raise European insects that feed only on loosestrife and pose no other ecological threat. The insects are released into wetland areas overgrown by the purple plant, forcing it to take its place among the vegetation rather than devastating it.

- **The Midas touch, from copper.** By adding just a little copper, **Georgia** scientists have discovered that they can make nursery plant containers made from recycled paper last longer. Though such containers break down very quickly under some environmental conditions, containers treated with copper hydroxide last as long as two years. The fiber containers also are perfect for hard-to-grow crops and plants prone to root disease problems.

USDA **United States Department of Agriculture**
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